underwent error-correction encoding and reordering of outer parity rows be represented by (p,q) and (r,t), respectively, where $0 <= p, r <= 207$ and $0 <= q, t <= 181$, and an order in which bytes in the combined block of FIG. 5 are sequentially written to storage medium 70 be represented by s, where $0 <= s <= (182 \times 208 \times 2) - 1$. In the writing operation, data to be read out from the unit blocks M(p,q) and N(r,t) is determined by the following equations: $s = p \times 364 + q$ and $s = r \times 364 + t + 182$.

The foregoing is provided only for the purpose of illustration and explanation of the preferred embodiment of the present invention, so changes, variations and modifications may be made without departing from the spirit and scope of the invention.

What is claimed is:

1. An error correction encoding method conducted in a digital data writing apparatus when recording data to a storage medium, comprising the steps of:

arranging said sequential input digital data so as to form a plurality of data blocks of a predetermined matrix form, said plurality of data blocks being formed sequentially;

appending outer parity of a predetermined size and inner parity of a predetermined size to each column and row of each of said plurality of data blocks, respectively;

reordering rows including outer parity so as to insert said rows including outer parity separately into the other rows including no outer parity for each of said plurality of encoded data blocks in said appending step; and

writing rows in the same order in said plurality of data blocks re-arranged in said reordering step to the storage medium sequentially on row-by-row basis.

2. A method according to claim 1, wherein in said arranging step, each of said plurality of data blocks is formed by using the equations: $i = b / X$ and $j = b - (X \times i)$, where i and j ($0 <= i <= (Y - 1)$ and $0 <= j <= (X - 1)$) represent row and column position in each data block of $(X \times Y)$-byte size, respectively, where b ($0 <= b <= (X \times Y) - 1$) represents an order in which the bytes in said sequential input data of $(X \times Y)$-byte size are inputted, and where X and Y are integers greater than 1.

3. A method according to claim 2, wherein X is 172 and Y is 192.

4. A method according to claim 3, wherein said outer parity is 16-byte long and said inner parity is 10-byte long.

5. A method according to claim 1, wherein said appending step comprises of the sub-steps of:

appending said outer parity of a predetermined size to each column of each of said plurality of data blocks in the column direction; and

appending said inner parity of a predetermined size to each row of each of said plurality of data block outer-parity-encoded in said outer parity appending step in the row direction.

6. A method according to claim 1, wherein in said writing step, said plurality of data blocks consist of N ($N>=2$) data blocks, each being $(J \times K)$- bytes in size, and a byte at ($R(i)$, $C(i)$) of the i-th data block is selected and written to said storage medium based on the equations: $S=R(i) x (JxN) +C(i) +Jx(i-1)$, where ($R(i)$, $C(i)$) ($0 <= R(i) <= (K - 1)$ and $0 <= C(i) <= (J - 1)$) represents row and column position in the i-th data block, and s ($0 <= S <= (J \times K \times N) - 1$) represents an order in which bytes in all data blocks

sequentially are written to said storage medium.

7. A method according to claim 6, wherein J is 182 and K is 208.

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